

***Progress Toward Restoring the
Everglades:
The Third Biennial Review, 2010***

**Committee on Independent Scientific
Review of Everglades Restoration
Progress**

National Research Council

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Committee Charge

- Congressionally mandated study under WRDA 2000.
- Study funded under a 5-yr contract with the USACE, with funding support from DOI and SFWMD

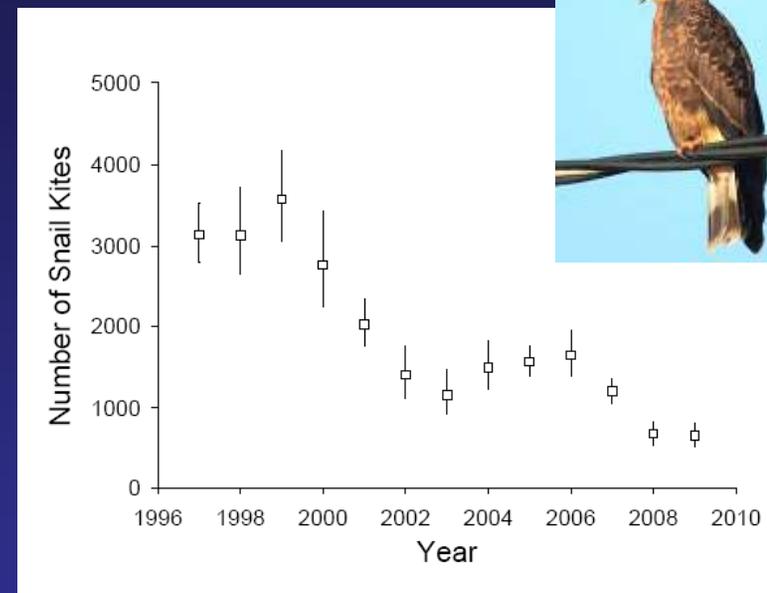
Statement of Task:

1. An assessment of progress in restoring the natural system
2. Discussion of significant accomplishments of the restoration
3. Discussion and evaluation of specific scientific and engineering issues that may impact progress in achieving the natural system restoration goals of the plan
4. Independent review of monitoring and assessment protocols to be used for evaluation of CERP progress

Context for Committee Findings

Over the past decade of CERP:

- Severe droughts and floods
- Reduced urban water demands
- Snail Kite, tree island declines, other species stable or improving
- Invasive species challenges
- Water quality challenges:
 - Judge Gold ruling
 - Numeric nutrient criteria
- Financial challenges



This committee reaffirms its predecessor's conclusions (NRC 2008) that continued declines of some aspects of the ecosystem make accelerated progress in Everglades restoration even more important.

Restoration Progress Has Begun

- **The restoration program has made tangible progress in past two years.**

- Current construction of 4 CERP projects
- Improvements in relationship between federal and state partners.



- **No CERP projects yet completed.**

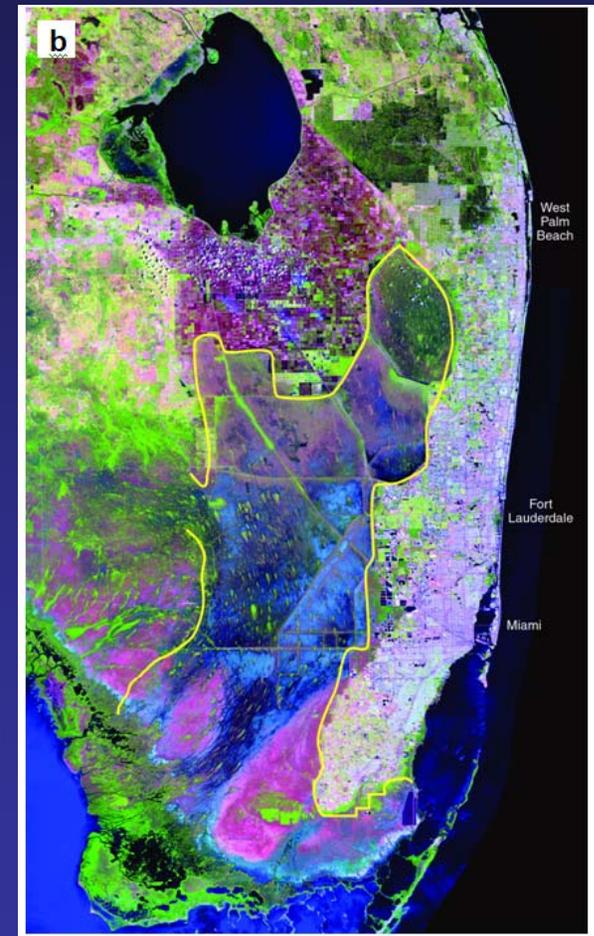
- _ Maintaining momentum—including political and public support—is critically important.

Scientific Foundation for Decision Making

- Research is providing sound basis for critical CERP decisions and adaptive management.
- Little recent progress has been made in developing integrated hydrologic, ecological, and biogeochemical models to inform restoration decision making and provide input for adaptive management.
- CERP leaders should examine the effectiveness of linkages between science and decision making

Restoration Challenges: Water Timing, Flow, Distribution

- It is not feasible to achieve the same degree of restoration throughout the remnant system.
- Ecological tradeoffs need to be analyzed from a whole system perspective
- Improved species models and multi-objective decision tools are urgently needed to support water management decisions.
- Improvements in near-term operations in WCA-3 could help address concerns there.



Restoration Challenges: Restoring Water Quality

- Attaining water-quality goals throughout the system likely to be very costly and could take many decades.
- Need systemwide, integrated efforts that address source controls, storage, and treatment.
- Comprehensive cost-effectiveness analysis needed
- Rigorous research and analysis needed to address:
 - Sustainability and performance of STAs
 - Source control effectiveness
 - Phosphorus mass balances



Tradeoff Analyses

Given that restoration originally envisioned in the CERP is decades away, CERP agencies should rigorously analyze the consequences of short- and longer-term tradeoffs between water quality and quantity in the Everglades ecosystem.

- The committee is *not* endorsing any particular tradeoffs at this time because analyses have not been performed to support such decisions.

Overall Summary

- Tangible improvements recently in pace of restoration, although progress remains slow.
- Science program is addressing important issues, but more transparent mechanisms for integrating science into decision making are needed.
- Several important challenges related to water quality and quantity have become increasingly clear, highlighting the difficulty of achieving restoration goals simultaneously for all ecosystem components. Achieving those goals will be very costly and will take decades at least.
- Rigorous scientific analyses are needed of potential conflicts among hydrologic requirements of various Everglades landscape features and species and tradeoffs between water quality and quantity. Understanding and communicating these tradeoffs to stakeholders are critical.